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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/543,100	07/22/2005	Koji Sugiura	Q88729	4084

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EXAMINER	
SCHLIENTZ, NATHAN W	
ART UNIT	PAPER NUMBER
1616	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/543,100	SUGIURA, KOJI	
	Examiner	Art Unit	
	Nathan W. Schlientz	1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 7-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 7-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/22/05 and 10/31/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 5 and 6 were cancelled; claim 4 was amended; and claims 7-14 were newly added in a preliminary amendment filed 22 July 2005. As a result, claims 1-4 and 7-14 are pending and are examined herein on the merits for patentability. No claim is allowed at this time.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1,148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 1, 3, 4, 8, 9, 11, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-037643 (Masuda et al.) and JP 2002-003239 (Yamamoto et al.).

Applicant claims:

Applicants claim a glass composition comprising the following components:

Component	Mass %
Ag_2O	0.1-2
ZnO	40.5-49
SiO_2	6-9.5
B_2O_3	30.5-39.5
alkaline earth metal oxide	2-10
Na_2O	6-7.5

wherein said glass composition is a powder with an average particle size of 0.1-30 μm.

Determination of the scope and content of the prior art

(MPEP 2141.01)

Masuda et al. teach an antimicrobial glass composition comprising the following components:

Component	Weight %
Ag_2O	0.01-3
ZnO	40-70
$SiO_2 + B_2O_3 + P_2O_5$	20-55
MgO, CaO, SrO, or BaO	0-30
Na_2O, Li_2O, or K_2O	0-5
Al_2O_3	0-20

Masuda et al. further teach that the antimicrobial glass and resin components containing the glass can avoid such bad influences on the resin as losing brightness and getting cloudy and rough and changing color when mixed with the resin, and the antibacterial activity is improved (Abstract). Masuda et al. teach that the particle size of the glass powder is 0.5-20 μm (paragraph [0023] of the machine-translated English copy). Also, Masuda et al. teach that the antimicrobial glass is present within the resin at 0.05 to 30 wt.% (paragraph [0026] of the machine-translated English copy), but 0.1 to

0.5 wt.% is sufficient for the antimicrobial properties (paragraph [0037] of the machine-translated English copy).

Yamamoto et al. teach an antibacterial glass composition comprising the following components:

Component	Mole %
ZnO	54-60
SiO_2	7-12
B_2O_3	25-32
alkali metal oxide	5-8

Yamamoto et al. further teach that the antibacterial glass exhibits an excellent antibacterial property by compounding with a resin and is also excellent in discoloration resistance, water resistance, and external appearances (Abstract). Yamamoto et al. further teach that the particle size of the glass powder is ≤20 μm (paragraph [0014] of the machine-translated English copy), and that concomitant use with silver (Ag) improves antibacterial effect with a synergistic effect with zinc (Zn) (paragraph [0022] of the machine-translated English copy).

Ascertainment of the difference between the prior art and the claims

(MPEP 2141.02)

Masuda et al. do not teach the amount of alkali metal oxide component present to be within the instantly claimed range of 6-7.5 mass %. However, Yamamoto et al. teach an antibacterial glass composition compounded with resin which comprises 5-8 mol% alkali metal oxide, wherein the composition is excellent in discoloration resistance, water resistance, and external appearances (Abstract).

Finding of *prima facie* obviousness

Rational and Motivation (MPEP 2142-43)

Therefore, it would have been *prima facie* obvious for one skilled in the art at the time of the invention to adjust the alkali metal oxide content of the glass composition taught by Masuda et al. to about 5-8 mol%, because Yamamoto et al. teach this amount of alkali metal oxide is sufficient while maintaining excellent antibacterial properties, excellent discoloration resistance, water resistance, and external appearances.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

2. Claims 2, 7, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable Masuda et al. and Yamamoto et al., as applied to claims 1, 3, 4, 8, 9, 11, 12 and 14 above, in view of JP 07-291654 (Emura et al.).

Applicant claims:

Applicants claim the vitreous glass composition according to claim 1, wherein the glass components further comprise 0.01 to 5 mass % CeO_2.

Determination of the scope and content of the prior art

(MPEP 2141.01)

Masuda et al. and Yamamoto et al. teach antibacterial glass compositions comprising Ag_2O, ZnO, SiO_2, B_2O_3, and alkali and alkaline earth metal oxides, wherein the glass compositions are used in resins, as discussed above.

Ascertainment of the difference between the prior art and the claims

(MPEP 2141.02)

Masuda et al. and Yamamoto et al. do not teach the antimicrobial glass compositions comprising CeO_2, as instantly claimed. However, Emura et al. teach borosilicate-based antimicrobial glass powders containing silver, wherein the presence of 0.1-2.0 wt.% CeO_2 controls the reduction of Ag^+ ions by sunlight (paragraph [0007] of the machine-translated English copy).

Finding of *prima facie* obviousness

Rational and Motivation (MPEP 2142-43)

Therefore, it would have been *prima facie* obvious for one skilled in the art at the time of the invention to add 0.1-2.0 wt.% CeO_2 to the silver-containing glass compositions of Masuda et al. and Yamamoto et al. in order to control the reduction of the Ag^+ ions by sunlight, as reasonably taught by Emura et al.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole would have been prima facie obvious to

one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Schlientz whose telephone number is 571-272-9924. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NWS

/Johann R. Richter/

Supervisory Patent Examiner, Art Unit 1616